CLEVELAND HAND BOOK

AND

STOCK LIST

OF MACHINES AND SMALL TOOLS FOR THE FABRICATION OF IRON AND STEEL

NUMBER 4

JANUARY, 1911

The
Cleveland Punch and Shear Works Co.
CLEVELAND, OHIO, U. S. A.

"OUR NAME DENOTES QUALITY"

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Chisel Blanks 10
High Speed Steel Reamers 17-23
How to Standardize 25
Machinery 42-59
Punches and Dies 26-35
Rivet Sets 2-4
Specification Sheets 61-62

Bought 8/64 from
Violette Schneider, Strongsville, Oh
$2.50

FOREWORD

This is the fourth issue of our "Hand Book and Stock List," and will be of particular interest to structural iron workers, boiler makers, erectors, etc.

A greater variety of tools are shown and much space is devoted to describing standard punches, dies, etc.

Copies of this book will be sent to any one desiring same.

THE CLEVELAND PUNCH AND SHEAR WORKS CO.

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VANADIUM ALLOY RIVET SETS

ARE JUST THE BEST THE BEST TRADE GETS

Since the invention of the Pneumatic Hammer the users of such tools have experienced much trouble and expense from the crystalization and the consequent breakage of Rivet Sets which invariably occurs in the neck of the tool.

During the past year this company has succeeded in obtaining a Vanadium Alloy Steel uniform in quality which shows remarkable results when made into Rivet Sets and properly heat treated.

Ordinary Tool Steel Snaps lose their hardening properties under the continued action of hot rivets and must be annealed, re-cupped and re-hardened.

This work is expensive and at the same time the snaps are not as good as they were at first. Vanadium Steel, on the other hand, should be re-cupped without annealing or re-hardening, by merely scraping the cup out with a sharp hand tool.

The heat of the rivets on this alloy steel makes it harder and tougher and, we believe, it is the ideal steel for rivet sets.

RIVET SETS

Manufactured from

TOOL STEEL and

VANADIUM ALLOY STEEL

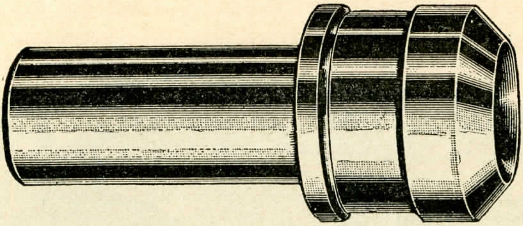


Fig. 151

These list prices cover Button or Steeple Head Snaps.

Diameter of Rivet, Inches	TOOL STEEL List Price	VANADIUM ALLOY STEEL List Price
⅜ to ¾	$2.25	$2.80
⅞	2 55	3.05
1	3.15	4.10
1⅛	3.75	4.85
1¼	5.25	5.80

Vanadium Alloy Button Head Snaps will be sent unless otherwise specified. See opposite page.

Special cups furnished to order, price depending on quantity purchased.

Write for discounts.

HAND RIVET SETS

The best grade is made of Extra Quality Tool Steel

Hand Forged. See page 41.

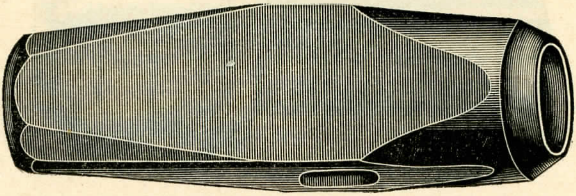


Fig. 226

Button Head Sets of the best grade will be sent unless otherwise specified.

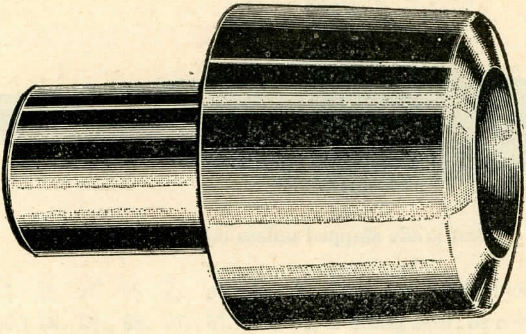
Size Rivet inch . . .	⅜	½	⅝	¾	⅞	1	1⅛
List Price, ea., best grade	$1.35	1.40	1.85	1.95	2.56	2.60	3.00
List Price, ea., com. grade	.95	1.00	1.30	1.40	1.80	1.80	2.10

Special Cups furnished to order, price depending on quantity purchased,

Write for Discounts

COMPRESSION RIVET DIES

Fig 148



Made of Tool Steel or Vanadium Alloy Steel.

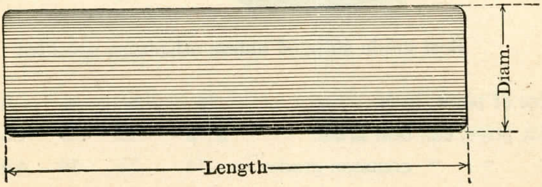
We recommend the Vanadium Steel Dies, as they will last several times the life of the ordinary tool steel dies.

PISTONS

For Pneumatic Hammers

Made of the best steel procurable for the purpose, hardened and ground to size.

Fig 152

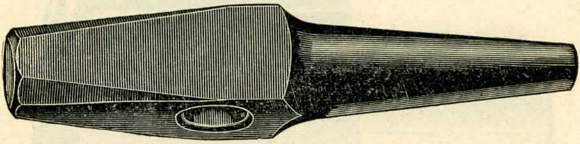


Pistons in stock are $1\frac{1}{16}$"x3", 3½" or 4" long.

HAND ROUND PUNCHES

The best grade is made of extra quality tool steel, hand forged. (See page 41.)

Fig. 227



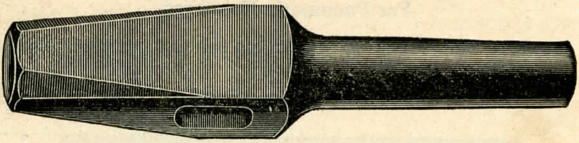
Best grade shipped unless otherwise specified.

Size point, inch . .	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1
List price ea., best grade	$ .75	.75	.75	.75	.85	.85	.95	1.30	1.50
" " " com. grade	.63	.63	.63	.63	.70	.70	.79	1.05	1.25

BACKING OUT PUNCHES

The best grade is made of extra quality tool steel, hand forged. (See page 41.)

Fig. 228



Best grade shipped unless otherwise specified.

Size of point, inch . .	½	⅝	¾	⅞	1
List price, ea., best grade	$.85	.85	.95	1.30	1.50
" " " common grade	.70	.70	.79	1.05	1.25

Write for discounts.

RIVET BUSTERS

The best grade is made of Extra Quality Tool Steel
Hand Forged. See page 41

Fig. 229

Cutting edge parallel to handle.

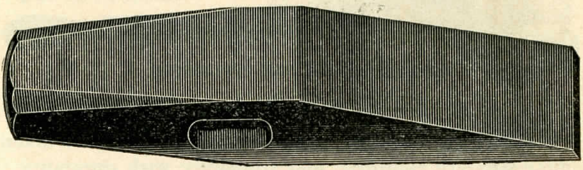


Fig. 230

Cutting edge at right angle to handle.

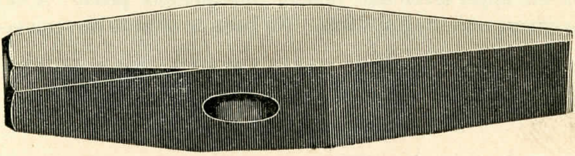
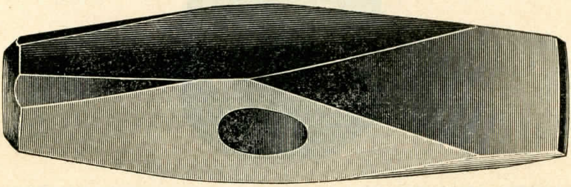


Fig. 231

Cutting edge at an angle of 45° to handle.



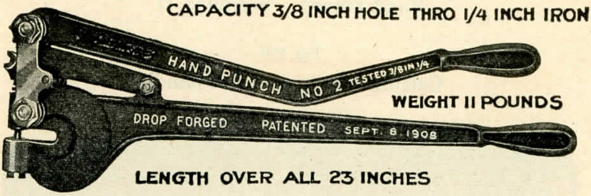
Size square steel, inches - - - - -	1¼	1½
Length, about inches - - - - -	6	7
List Price, each, best grade, Fig. 229, 230, 231 -	$0.95	$1.30
List Price, each, common grade - - -	.56	.75

In ordering advise Fig. number and size wanted.

Best grade shipped unless otherwise specified.

PORTABLE HAND PUNCHES

Fig. 232


HAND PUNCH NO 2 TESTED 3/8 IN 1/4
DROP FORGED PATENTED SEPT. 8 1908

CAPACITY 3/8 INCH HOLE THRO 1/4 INCH IRON

WEIGHT 11 POUNDS

LENGTH OVER ALL 23 INCHES

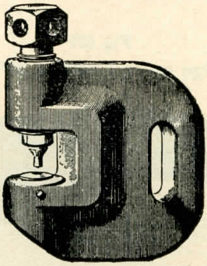
Price $11.00

In designing these punches every care has been taken to combine strength, lightness and simplicity with durability. No other portable punch compares with it, in capacity, lightness, shortness in length, or quick adaptability to various kinds of work.

The size of the punch can be instantly changed by throwing over the upper lever and raising intermediate piece. A simple movement requiring no tools. No bolts or nuts to be removed.

HAND SCREW PUNCH

Fig 233



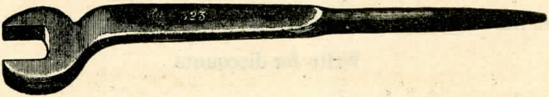
Number . . .		A	B	C	D	E	F	G
Will punch hole .	inch	5/16	½	½	¾	¾	¾	¾
Through Iron . .	inch	¼	¼	5/16	½	¾	¾	¾
Distance from edge	inch	1½	1½	1½	2	2½	3½	4
Weight . . .	pounds	15	17	27	40	60	90	100
Price	each	$6	$7.20	$9	$12	$18	$22.50	$24

Immediate deliveries on the tools noted above

WRENCHES

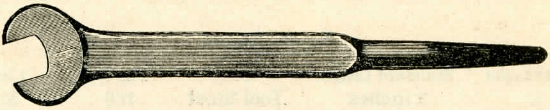
STRUCTURAL WRENCH

Fig. 234



CONSTRUCTION WRENCH

Fig. 235



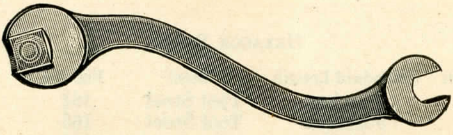
In ordering, advise size of bolt.

Fig. No. 234 and Fig. No. 235

For U. S. Standard Nut. Size Bolt	Opening	Extreme Length	Price, semi-finished
¼	17/32	8	$0 24
5/16	⅝	8	24
⅜	23/32	9½	30
7/16	13/16	9½	30
½	29/32	11½	48
9/16	1	12¾	60
⅝	1 7/64	14⅛	75
¾	1 19/64	16	99
⅞	1½	17½	1 28
1	1 11/16	19	1 65

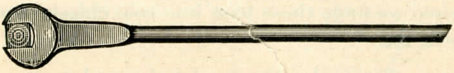
CAR WRENCH

Fig. 236



TRACK WRENCH

Fig. 237



Prices on Fig. Nos. 236 and 237 sent on application.

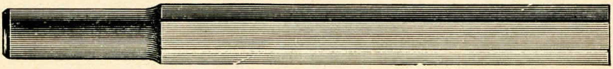
CHISEL BLANKS

In stock for any style of

PNEUMATIC HAMMER

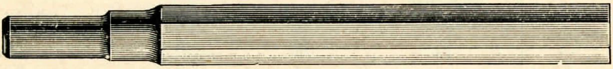
Tool Steel Chisels will be furnished unless otherwise specified

Write for discounts



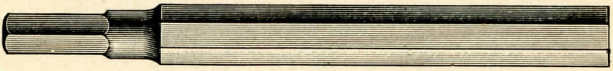
ROUND SHANK

Size Octagon	Standard Length	Steel	Fig. No.	List Price
¾	9 inches	Tool Steel	160	$1.00
⅞	9 inches	Tool Steel	163	1.40
¾	9 inches	Alloy Steel	166	1.00
⅞	9 inches	Alloy Steel	169	1.40



COMBINATION SHANK

Size Octagon	Standard Length	Steel	Fig. No.	List Price
¾	9 inches	Tool Steel	161	$1.20
⅞	9 inches	Tool Steel	164	1.60
¾	9 inches	Alloy Steel	167	1.20
⅞	9 inches	Alloy Steel	170	1.60



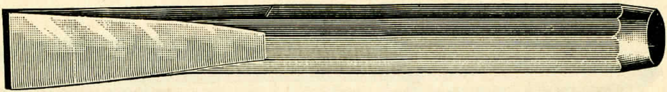
HEXAGON SHANK

Size Octagon	Standard Length	Steel	Fig. No.	List Price
¾	9 inches	Tool Steel	162	$1.40
⅞	9 inches	Tool Steel	165	1.80
¾	9 inches	Alloy Steel	168	1.40
⅞	9 inches	Alloy Steel	171	1.80

If desired we forge these tools into cold chisels, flue beaders, calking tools, etc.

Special lengths furnished to order

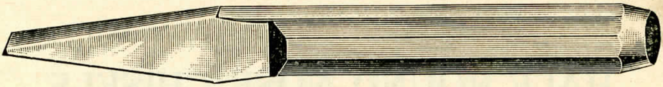
HAND COLD CHISELS



Description of the three grades of chisels at the bottom of page.

Size Oct. Steel, in.	¼	5/16	⅜	½	⅝	¾	⅞	1
Length, inches	4½	5	5	6	6¾	7½	8	8
Wt. per doz. about lb.	¾	1½	2¼	4	7	11	15	20
No. 257, list price, doz.			.54	.76	1.30	1,70	2.20	2.75
No. 258, " " "	.96	1.08	1.20	1.50	2.30	3.70	5.00	6.60
No. 259, " " "	1.10	1.40	1.70	2.30	3.70	5.90	8.00	10.60

CAPE CHISELS



When ordering, specify size of cutting edge

Size Oct. Steel, in.	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1
Size Cutting Edge, in.	3/16	7/32	¼	5/16	5/16	⅜	½	⅝	11/16
Length, in.	4¾	5¼	5½	6	6½	7½	8	8½	9½
Wt. per doz. about lbs.	¾	1½	2¼	3	4	7	11	15	20
No. 257, list price, per doz.			$ .66	.76	.88	1.46	1.94	2.44	4.00
No. 258, " " " "	.96	1.08	1.20	......	1.50	2.30	3.70	5.00	6.60
No. 259, " " " "	1.10	1.40	1.65	....	2.30	3.70	5.90	8.00	10.60

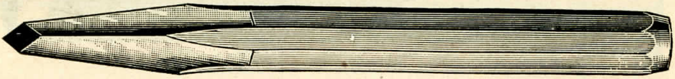
No. 257 grade is made of cast steel and is the common grade sold by jobbers.

No. 258 grade is made of extra qualty tool steel, easily forged and hardened. All orders are filled with this grade unless otherwise specified.

No. 259 grade is an alloy steel, hardened the same as tool steel, but the temper is drawn only slightly. After hardening, you will find this steel can be filed or bent, but it makes extremely tough chisels for heavy work.

Write for discounts

DIAMOND POINT CHISELS

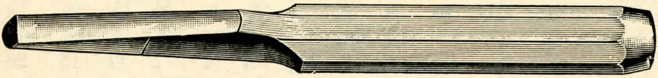


When ordering, specify size of point

These tools are made of our No. 258 grade, which is extra quality tool steel. See page 11.

Size Oct. Steel, in.	5/16	3/8	1/2	5/8	3/4	7/8
Size Point, in.	7/32	1/4	5/16	3/8	1/2	5/8
No. 258, List Price, per doz.	$1.08	1.20	1.50	2.30	3.70	5.00

HALF ROUND NOSE CHISELS



When ordering, specify size of point

These tools are made of our No. 258 grade, which is extra quality tool steel. See page 11.

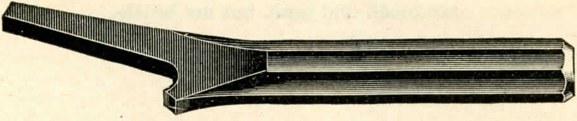
Size Oct. Steel, in.	5/16	3/8	1/2	5/8	3/4
Size Point, in.	7/32	1/4	5/16	3/8	1/2
No. 258, List Price, per doz.	$1.08	1.20	1.50	2.30	3.70

Write for discounts

FLUE BEADING TOOLS

†Extra Quality Tool Steel, Hand Forged

Fig. 238



Size Octagon Steel, . .	⅞
Length, inches . . .	7
List price, Fig. 238, per dozen	$7.20

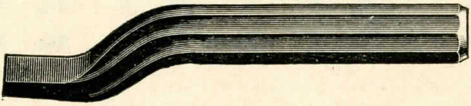
Fig. 260 is same as above only longer, and shank end is machined to fit pneumatic hammers.

List prices Fig. 260 same as chisel blanks on page 10.

BOILER MAKERS' CALKING TOOLS

†Extra Quality Tool Steel, Hand Forged.

Fig. 239



Size Octagon Steel, in.	⅝	¾	⅞	⅞	1	1	1	1⅛
Length shanks, ins. .	5½	5½	5½	5½	5½	5½	5½	5½
Length blades, ins. .	1½	1½	1½	1½	1½	1½	1½	1½
Size blades at point, in.	⅛	¼	⅜	½	⅝	¾	⅞	1
List price, per dozen	$2.40	3.10	3.85	3.85	5.00	5.00	5.00	6.00

† See page 41

DRIFT PINS

We manufacture drift pins out of special steel. The tools are tough and hard, but not brittle.

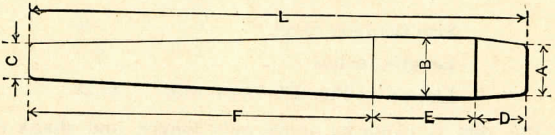


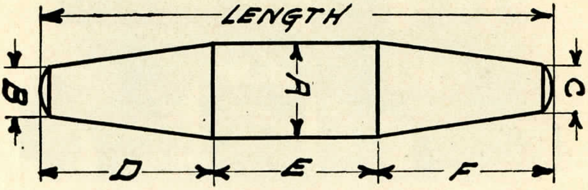
Figure Number	198	199	200	201	202	203	204	205
List Price .	.10	.12	.13	.21	.27	.34	.39	.55
A, inches .	3/16	5/16	7/16	9/16	11/16	¾	⅞	1 1/16
B, inches .	5/16	7/16	9/16	11/16	13/16	15/16	1 1/16	1 3/16
C, inches .	5/32	¼	⅜	7/16	7/16	½	⅝	¾
D, inches .	½	½	½	¾	¾	¾	¾	1
E, inches .	1½	1½	1½	2	2¼	2¼	2¾	2½
F, inches .	3¾	4	4	4½	5	5¼	5¼	5½
L, inches .	5¾	6	6	7¼	8	8¼	8¾	9

Immediate deliveries can be made.

Write for discounts.

BARREL PINS

Fig. 147



Barrel Pins can be furnished in any length or taper.

In ordering, advise Fig. No. and dimensions wanted.

MARKERS

Fig. 145

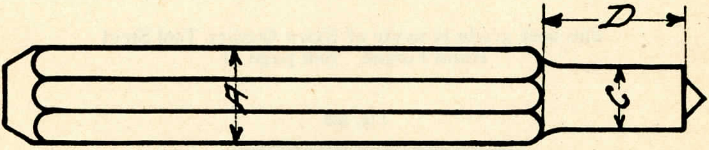
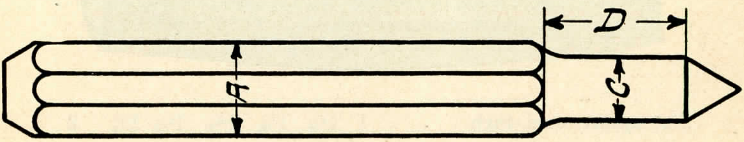
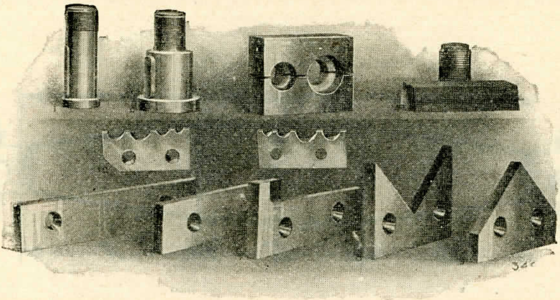


Fig. 146



In ordering Markers, advise Fig. No. and dimensions wanted.

SHEAR BLADES

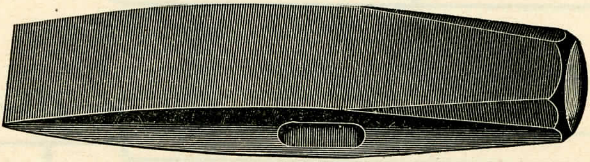


The illustration above shows various styles of Shear Blades, punch stems and the split die socket used on Standard Cleveland Machines. Sketches of blades showing locations of bolt holes should accompany all orders, unless we have furnished same heretofore,

COLD CUTTER

The best grade is made of Extra Quality Tool Steel
Hand Forged. See page 41

Fig. 240



Size square steel, inch .	1	1⅛	1¼	1⅜	1½	1¾	2
List Price, ea., best grade .	.55	.63	.85	1.05	1.30	1.80	2.30
List Price. ea., com. grade	.32	.38	.50	.63	.75	1.10	1.40

HIGH SPEED REAMERS FOR HEAVY IRON WORK

With Taper Shanks

For use in Boiler, Bridge, Ship and Structural Work

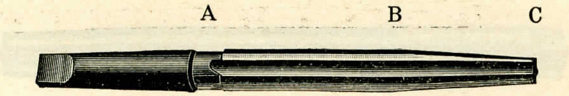


Fig. 153

Diam. Inches			High Speed Steel Price, Each	Length over all, Inches	Length Flute Inches	Standard Taper Shank
A	B	C				
1/2	1/2	5/16	$ 4.00	8	4 1/4	No. 2
9/16	9/16	3/8	4.25	8	4 1/4	
5/8	5/8	3/8	4.50	9	5 1/4	
11/16	11/16	3/8	4.75	10	5 5/8	No. 3
3/4	3/4	7/16	5.00	11	6 5/8	
13/16	13/16	1/2	5.30	11	6 5/8	
7/8	7/8	9/16	5.70	11	6 5/8	
15/16	15/16	5/8	6.00	11	6 5/8	
1	1	11/16	6.50	11	6 5/8	
1 1/16	1 1/16	22/32	7.00	11	6 5/8	
1 1/8	1 1/8	25/32	7.50	11	6 5/8	
1 3/16	1 3/16	27/32	8.00	11	6 5/8	
1 1/4	1 1/4	7/8	8.75	11	6 5/8	No. 4
1 5/16	1 5/16	1	9.50	12	6 5/8	
1 3/8	1 3/8	1 1/16	10.50	12	6 5/8	
1 7/16	1 7/16	1 1/8	12.00	12	6 5/8	
1 1/2	1 1/2	1 3/16	14.00	12	6 5/8	

Write for discounts

HIGH SPEED REAMERS FOR HEAVY IRON WORK

With Squared Shanks

For use in Boiler, Bridge, Ship and Structural Iron Work

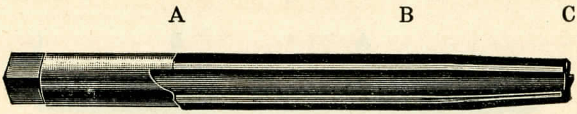


Fig. 225

Diam., Inches			Price Each	Length Over All inches	Length Flute Inches	Length Tapered End Inches
A	B	C				
½	½	5/16	$3.30	6¾	5¼	3
9/16	9/16	⅜	3.50	7¾	5¼	3
⅝	⅝	⅜	3.70	8¾	6¼	3
11/16	11/16	⅜	3.90	8¾	6¼	3
¾	¾	7/16	4.10	10⅛	7⅝	3
13/16	13/16	½	4.40	10⅛	7⅝	3
⅞	⅞	9/16	4.70	10⅛	7⅝	3
15/16	15/16	⅝	5.00	10⅛	7⅝	3
1	1	11/16	5.30	10⅛	7⅝	3
1 1/16	1 1/16	23/32	5.85	10⅛	7⅝	3
1⅛	1⅛	25/32	6.40	10⅛	7⅝	3
1 3/16	1 3/16	27/32	6.95	10⅛	7⅝	3
1¼	1¼	⅞	7.50	10⅛	7⅝	3
1 5/16	1 5/16	1	8.25	10⅛	7⅝	3
1⅜	1⅜	1 1/16	9.00	10⅛	7⅝	3
1 7/16	1 7/16	1⅛	10.00	10⅛	7⅝	3
1½	1½	1 3/16	11.00	10⅛	7⅝	3

Write for discounts

TWISTED REAMERS OF HIGH SPEED STEEL

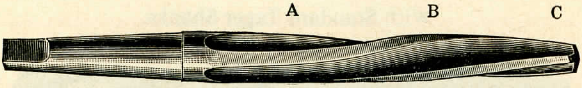


Fig. 254

These reamers are manufactured by twisting with a left hand twist an especially rolled section of high speed steel while hot. These tools are provided with a taper for a certain distance from the point and, due to the left hand twist, a shearing cut is permitted which makes the operation of the tool far easier than that of the ordinary straight fluted reamers.

Reamers illustrated by Fig. 254 above are provided with a Morse taper shank. These tools can be also furnished with a straight fluted shank which require a special socket as illustrated on page 21.

Diam. Inches			Length Over All Inches	Length of Tapered Point, in.	High Speed Steel Price, each
A	B	C			
3/8	3/8	5/16	8	1	$2.20
7/16	7/16	5/16	8	1	2.30
1/2	1/2	5/16	8	2	2.40
9/16	9/16	3/8	8	2	2.50
5/8	5/8	3/8	9	3	2.70
11/16	11/16	3/8	10	3	2.90
3/4	3/4	7/16	11	3	3.10
13/16	13/16	1/2	11	3	3.30
7/8	7/8	9/16	11	3	3.55
15/16	15/16	5/8	11	3	3.80
1	1	11/16	11	3	4.15
1 1/16	1 1/16	23/32	11	4	4.50
1 1/8	1 1/8	25/32	11	4	5.00
1 3/16	1 3/16	27/32	11	4	5.50
1 1/4	1 1/4	7/8	11	4	6.00
1 5/16	1 5/16	1	12	4	6.50

THREE FLUTED TWISTED HIGH SPEED DRILLS

With Standard Taper Shanks.

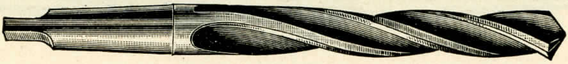


Fig. 270

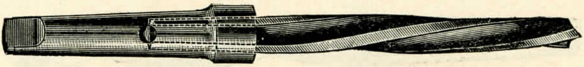
These high speed drills are stronger than the ordinary flat twisted drills and are of a particular value to structural iron workers for reaming punched holes. Tools of this description are used by some of the larger fabricators in the country and we recommend them very highly.

Diameter	Length Spiral	Length Over All	No. Shank	Price
⅜	4	8	1	$2.15
7/16	4	8	1	2.20
½	5	8	2	2.40
9/16	5¼	8	2	2.80
⅝	5½	9	3	3.20
11/16	6	10	3	3.60
¾	6½	11	3	4.00
13/16	6¾	11	3	4.40
⅞	7¼	11	3	4.80
15/16	7⅜	11	3	5.20
1	7⅜	11	3	5.60
1 1/16	7⅜	11	4	6.10
1⅛	7¾	11	4	6.70
1 3/16	8	11	4	7.30
1¼	8½	11	4	8.00
1 5/16	9⅛	12	4	9.00

HIGH SPEED REAMERS

With three flutes and left hand twist made to fit sockets listed below.

Fig, 271

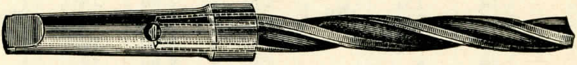


Sizes and prices same as on page 19.
See page 19 for these tools with standard taper shanks.

HIGH SPEED DRILLS

With three flutes and right hand twist made to fit sockets listed below.

Fig. 272



Sizes and prices same as on page 20.
See page 20 for these tools with standard taper shanks.

SOCKETS

For holding above Reamers and Drills, (Fig. 271, 272.)

No.	Price	No.	Price
1 to 2	$1.80	3 to 3	$3.20
1 to 3	2.40	3 to 4	3.00
1 to 4	3.00	3 to 5	4.40
1 to 5	4.40	4 to 3	4.80
2 to 2	2.50	4 to 4	4.80
2 to 3	2.40	4 to 5	4.40
2 to 4	3.20	5 to 4	10.00
2 to 5	4.40	5 to 5	10.00
3 to 2	3.20		

"MARATHON"
HIGH SPEED DRILLS

With Standard Taper Shanks

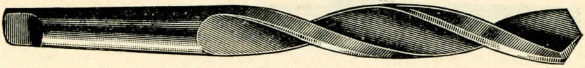


Fig. 211

These drills are made from the best high speed steel obtainable and are tempered for severe work. The tools are forged and twisted hot.

64th sizes furnished on short notice at price of next larger size.

Diameter Inches	Price, Each	Length Over All Inches	Standard Taper Shank	Diameter Inches	Price, Each	Length Over All Inches	Standard Taper Shank
3/8	$1.05	6 3/4	No. 1	1 7/32	$ 6.90	12 1/8	No. 4
13/32	1.10	7		1 1/4	7.20	12 1/2	
7/16	1.15	7 1/4		1 9/32	7.60	14 1/8	
15/32	1.20	7 1/2		1 5/16	8.00	14 1/4	
1/2	1.30	7 3/4		1 11/32	8.40	14 3/8	
17/32	1.40	8		1 3/8	8.80	14 1/2	
9/16	1.50	8 1/4	No. 2	1 13/32	9.20	14 5/8	No. 5
19/32	1.60	8 1/2		1 7/16	9.60	14 3/4	
5/8	1.75	8 3/4		1 15/32	10.00	14 7/8	
21/32	1.90	9		1 1/2	10.40	15	
11/16	2.05	9 1/4		1 17/32	10.80	15 1/8	
23/32	2.25	9 1/2		1 9/16	11.20	15 1/4	
3/4	2.40	9 3/4		1 19/32	11.65	15 3/8	
25/32	2.60	9 7/8		1 5/8	12.10	15 1/2	
13/16	2.80	10		1 21/32	12.60	15 5/8	
27/32	3.00	10 1/4		1 11/16	13.05	15 3/4	
7/8	3.20	10 1/2		1 23/32	13.60	15 7/8	
29/32	3.45	10 5/8	No. 3	1 3/4	14.10	16	
15/16	3.75	10 3/4		1 25/32	14.55	16 1/8	
31/32	4.05	10 7/8		1 13/16	15.00	16 1/4	
1	4.35	11		1 27/32	15.50	16 3/8	
1 1/32	4.75	11 1/8		1 7/8	16.00	16 1/2	
1 1/16	5.10	11 1/4		1 29/32	16.55	16 1/2	
1 3/32	5.45	11 1/2		1 15/16	17.10	16 1/2	
1 1/8	5.80	11 3/4		1 31/32	17.65	16 1/2	
1 5/32	6.20	11 7/8	No. 4	2	18.20	16 1/2	
1 3/16	6.55	12		2 1/16	19.50	17	
				2 1/8	20.80	17	
				2 3/16	22.20	17	

Write for discounts.

DRILLING SPEEDS FOR HIGH SPEED DRILLS

It is impossible to give the exact cutting speeds and feeds per revolution, because of the physical and chemical characteristics of the material being drilled. Keep the drilling machine in good condition and grind the drills with care.

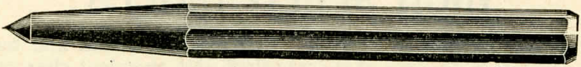
The table below gives the speeds recommended for Marathon drills. Speeds not given will be sent on request.

DRILL SIZE	R. P. M.	CAST IRON OF AVERAGE QUALITY — FEED Inches per rev.	Inches per min.
⅝	600	.015 to .025	9 to 15
¾	500	.018 " .030	9 " 15
⅞	440	.018 " .030	8 " 13
1	380	.018 " .030	7 " 11
1⅛	340	.020 " .030	7 " 11
1¼	300	.020 " .030	6 " 9

DRILL SIZE	R. P. M.	MEDIUM STEEL — FEED Inches per rev.	Inches per min.
⅝	500	.010 to .015	5 to 8
¾	400	.010 " .020	4 " 7
⅞	350	.010 " .020	3 " 7
1	300	.010 " .020	3 " 6
1⅛	270	.015 " .020	4 " 5½
1¼	240	.015 " .020	3½ " 5

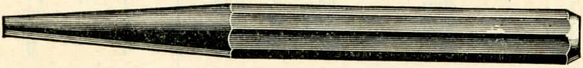
DRILL SIZE	R. P. M.	HARD OR VERY TOUGH STEEL — FEED Inches per rev.	Inches per min.
⅝	220 to 360	.008 to .010	2 to 3½
¾	200 " 300	.010 " .012	1¾ " 3½
⅞	180 " 260	.010 " .012	1¾ " 3¼
1	150 " 225	.010 " .015	1½ " 3
1⅛	140 " 200	.012 " .020	1½ " 4
1¼	120 " 180	.012 " .020	1½ " 3½

MACHINISTS' CENTER PUNCHES



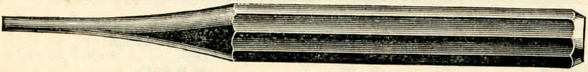
Size, Octagon Steel, inch	5/16	⅜	7/16	½
Length, inches	4¼	4½	5	5¼
Fig. 242, Best Grade, per dozen	$1.20	$1.44	$1.56	$1.68
Fig. 243, Common Grade, Polished Taper, per dozen	.72	.75	.82	.92
Fig. 244, Common Grade, Black Taper, per dozen	.65	.68	.75	.80

MACHINISTS' SOLID PUNCHES



Size, Octagon Steel, inch	5/16	⅜	7/16	½
Length, inches	4½	4¾	5½	6
Size Point, inch	3/32	⅛	5/32	3/16
Fig. 245, Best Grade, per dozen	$1.20	$1,44	$1.56	$1.68
Fig. 246, Common Grade, Polished Taper, per dozen	.72	.75	.82	.92
Fig. 247, Common Grade, Black Taper, per dozen	.65	.68	.75	.80

MACHINISTS' DRIFT PUNCHES



Size, Octagon Steel, inch	5/16	⅜	7/16	½
Length, inches	4½	4¾	5½	6
Size point	3/32	⅛	5/32	3/16
Fig. 248, Best grade, per dozen	$1.20	$1.44	$1.56	$1.68
Fig. 249, Polished taper, per dozen	0.72	0.75	0.82	0.92
Fig. 250, Black taper, per dozon	.65	.68	.75	.80

Write for discounts

HOW TO STANDARDIZE

Standard tools should be used by every company operating one or more punching machines, as they cost less, and can be shipped immediately from stock.

On page 26 the Cleveland System is described in detail and even if you are satisfied with your present arrangement it would be well to become acquainted with this system.

We carry in stock also the Pratt & Whitney and Richards systems shown on pages 33 and 34.

On pages 30 and 31 we show sketches of the punches in the Cleveland, P. & W. and Richards systems, and designate them by figure numbers, which the customer can use in ordering if he so desires.

Compare what you now use with these tools and perhaps you can arrange your punch stem and coupling to hold standards with little or no expense.

Sometimes by merely enlarging the bore in the old coupling, or by purchasing a new coupling, standard tools can be used.

We find as a rule that most companies use punches too long and of a poor design for the work required, which means a continual loss.

THE "CLEVELAND" SYSTEM

"The "Cleveland" System shown on this and the following three pages is the most economical system of punches in use.

Punches Figs. 6, 11 and 16 fit number 3 or 3s "Cleveland" coupling nuts (opposite page), so that one is able to punch any size hole from $\frac{1}{8}$ to $1\frac{1}{16}$ inch inclusive by using the same nut and punch stem.

Figs. 6 and 11 are made out of smaller stock than Fig. 16, in order to lessen the cost. These two smaller sizes fit the same couplings as Fig. 16 by using sleeves shown (Nos. 76 and 78).

There is no appreciable wear on these sleeves, hence they last indefinitely.

These three styles of punches are the same length, so no buttons or shims are needed.

Fig. 6 punches holes from $\frac{1}{8}$ inch to $\frac{7}{16}$ inch inclusive.

Fig. 11 punches holes from $\frac{15}{32}$ inch to $\frac{11}{16}$ inch inclusive.

Fig. 16 punches holes from $\frac{23}{32}$ inch to $1\frac{1}{16}$ inch inclusive.

Order punches and dies by figure number or see pages 61 and 62

THE CLEVELAND SYSTEM

Description is on opposite page

Fig. 6

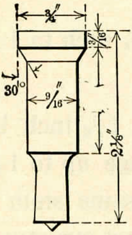


Fig. 11

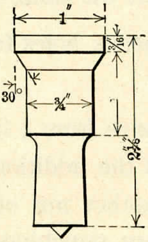


Fig. 16

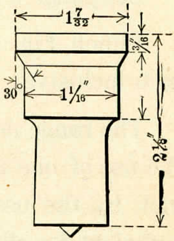


Fig. 76

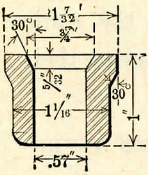
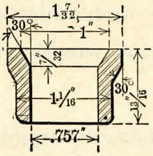
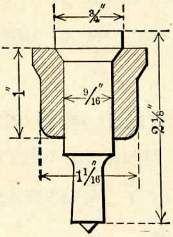


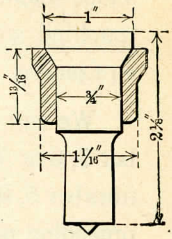
Fig. 78



Figs. 6 & 76 Combined

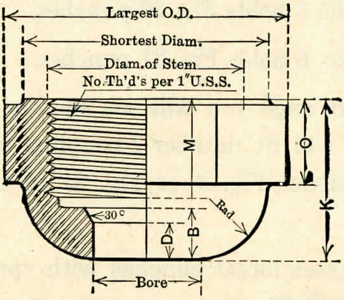


Figs. 11 & 78 Combined



CLEVELAND COUPLINGS

See opposite page regarding their use with Standard Punches



									Special		
	1	2	3s	3	4	5	6	7	19	20	21
List Price . .	.75	.75	1.00	1.25	1.50	6 00	6 00	7.00	1.00	1.00	1.25
Largest O. D. .	1⅞	1⅞	2 5/16	2⅞	2⅞	4 1/16	4 1/16	4⅝	2 5/16	2 5/16	2⅝
Threads per inch	10	10	10	10	10	10	10	10	10	10	10
Diam. of stem	1⅛	1⅛	1⅜	2	2	2⅝	2⅝	3	1⅜	1 7/16	1⅝
Bore	.57	.757	1.07	1.07	1.32	1.57	2.07	2.578	1.07	1.07	1.07
K	1 5/16	1 5/16	1⅝	1⅝	1⅝	2⅛	2⅛	2⅜	1 5/16	1⅝	1⅝

Order punches and dies by figure number or use pages 61 and 62

Fig. 23 fits "Cleveland" coupling nut number 4 shown on preceding page.

Couplings 3 and 4 fit the same stem.

Punch Fig. 23 punches holes from $1\frac{1}{16}$ inch to $1\frac{5}{16}$ inch inclusive.

The range noted above from $\frac{1}{8}$ inch to $1\frac{1}{16}$ inch by the use of one nut and the additional range up to $1\frac{5}{16}$ inch by the use of another nut on the same stem is sufficient for all ordinary punching. In fact structural shops seldom punch over $1\frac{1}{16}$ inch holes on the same machine, so the use of one nut would complete their equipment.

We can furnish with our heavier machines a number 5, 6 or 7 stem to which are fitted correspondingly number 5, 6 or 7 "Cleveland" coupling nuts shown on preceding page.

Couplings No. 5 and No. 6 fit the same stem.

Coupling No. 5 holds Fig. 29 punches.

Coupling No. 6 holds Fig. 31 punches.

On the next page you will see sleeves Fig. 75 and Fig. 77 which will fit number 7 coupling nut enabling you to use punches Fig. 29 or Fig. 31 in this number 7 nut.

We make these larger punches with spring centers if you so order them.

If you desire to use punches Fig. 6 and Fig. 11 without sleeves, order a coupling nut with the bore required.

Order punches and dies by figure number or use pages 61 and 62

THE CLEVELAND SYSTEM

Description is on opposite page

Fig. 23

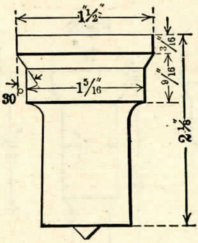


Fig. 29

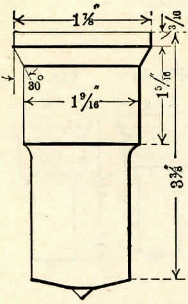


Fig. 31

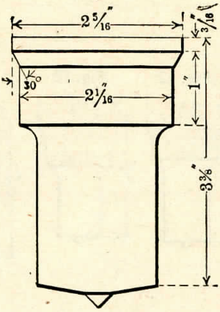


Fig. 32

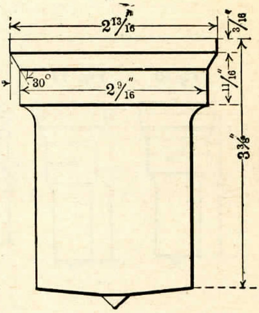


Fig. 75

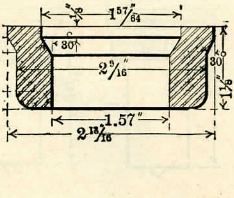
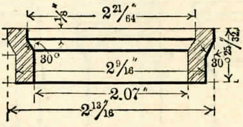


Fig. 77



Order punches and dies by figure number or use pages 61 and 62

PUNCHES IN STOCK

READY MADE TO SHIP THE TRADE

Fig. 3

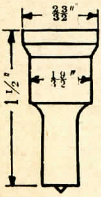


Fig.4

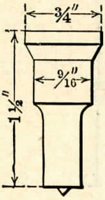


Fig.6

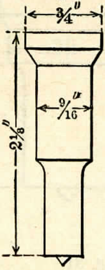


Fig.7

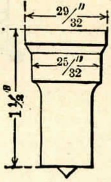


Fig.9

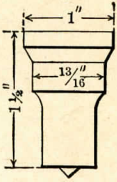


Fig.10

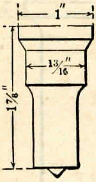


Fig. 11

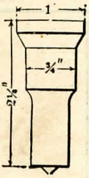


Fig. 12

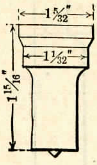


Fig. 15

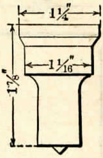


Fig. 16

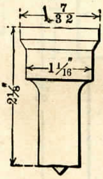


Fig. 17

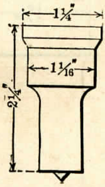


Fig.19

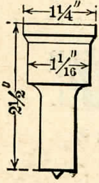


Fig.20

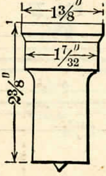


Fig.23

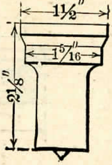


Fig.26

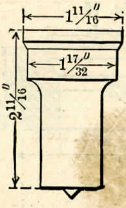
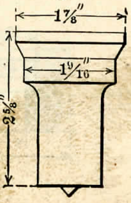


Fig.28



Order by figure number or tear out
pages 61 and 62

PUNCHES IN STOCK

READY MADE TO SHIP THE TRADE

Fig.29

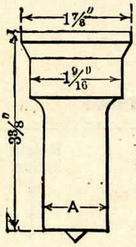


Fig.30

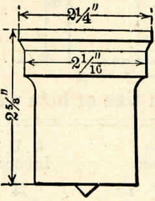


Fig.31

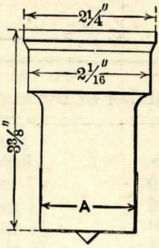


Fig.32

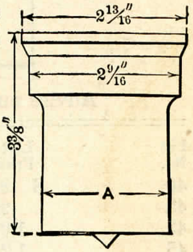
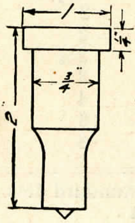


Fig. 33



Fig, 34

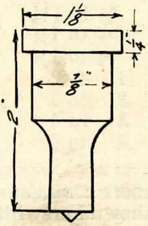


Fig 36

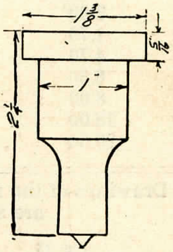


Fig. 37

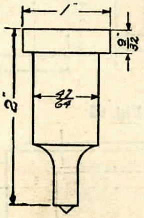


Fig. 38

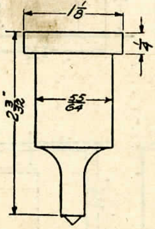
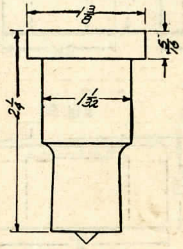
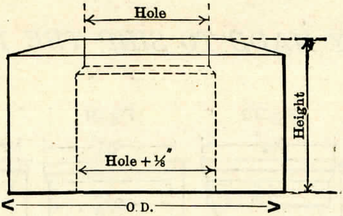


Fig. 39



Order punches and dies by figure number or use pages 61 and 62

DIES IN STOCK



Advise number of Die and size of hole wanted

Fig No.	List Price	Hole inches	O. D. inches	Height inches
40	$ .80	⅛ to 5/16	¾	⅞
42	.90	⅛ to 9/16	1	⅞
43	1.00	⅛ to ⅝	1¼	⅞
45	1.25	¼ to 15/16	1½	⅞
46	1.50	¼ to 15/16	1½	1
55	1.70	¼ to 1 1/16	1 13/16	1⅛
59	2.00	½ to 1¼	2	1
60	1.70	½ to 1¼	2	1⅛
65	4.70	⅝ to 1⅝	2½	1¼
71	6.50	1 to 2	3	1¼
72	8.00	2 to 3	4	1¼
73	18.00	3 to 4	6	1⅝
74	28.00	4 to 6	8	1⅝

Drawings of the more common standard dies
are shown herewith

Fig. 42

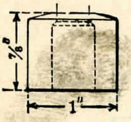


Fig. 43

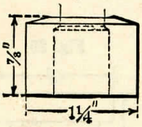


Fig. 45

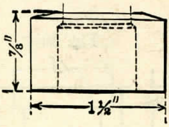


Fig. 55

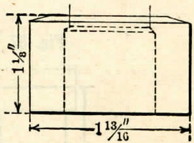


Fig. 60

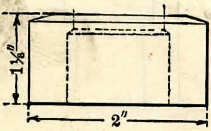
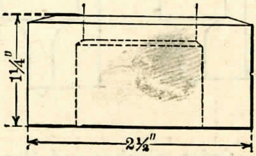


Fig. 65

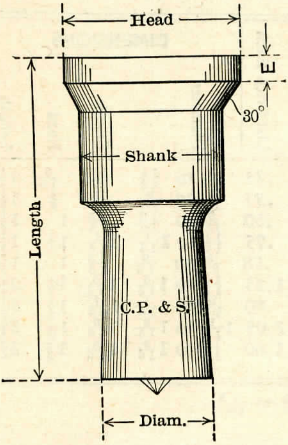


Order punches and dies by figure number, or
use pages 61 and 62

P. & W. PUNCHES AND DIES

We hold these tools in stock for the convenience of our customers.

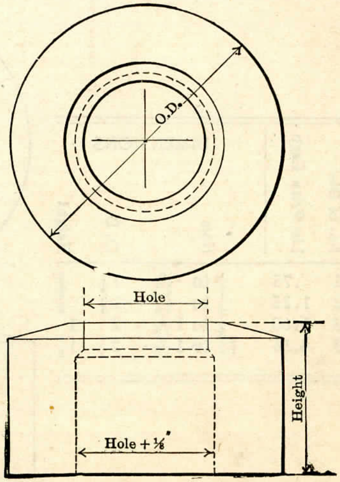
We recommend the more economical standard shown on pages 26 to 29.



No. of Punch	List Price Each	DIMENSIONS Diameter	Shank	Head	Length
2	.35	1/8 to 3/8	13/32	17/32	1 9/32
3	.40	1/8 to 9/16	19/32	23/32	1 15/32
4	.60	1/4 to 13/16	25/32	29/32	1 1/2
5	.90	3/8 to 1	1 1/32	1 5/32	1 15/16
6	1.20	9/16 to 1 1/4	1 7/32	1 3/8	2 3/8
7	1.60	11/16 to 1 9/16	1 17/32	1 11/16	2 11/16
8	2.50	1 to 1 3/4	1 25/32	2 1/16	3
9	5.00	1 1/2 to 2 1/4	2 9/32	2 9/16	3
10	6.50	2 to 2 5/8	2 21/32	2 31/32	3

E = 3/16"

No. of Die	List Price Each	DIMENSIONS Hole	O. D.	Height
2	.75	1/8 to 5/16	3/4	5/8
3	1.00	1/8 to 9/16	1	3/4
4	1.50	1/4 to 3/4	1 1/2	1
5	2.00	1/4 to 1	2	1
6	2.50	1/2 to 1 1/4	2 3/8	1 1/4
7	4.50	3/4 to 1 9/16	2 7/8	1 1/4

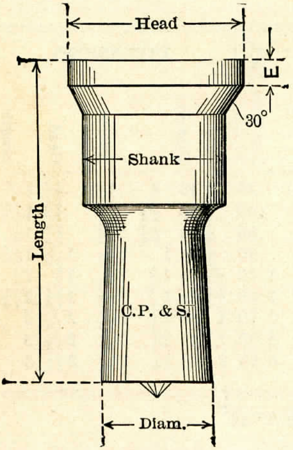


Write for discounts

RICHARDS PUNCHES AND DIES

We hold these tools in stock for the convenience of our customers.

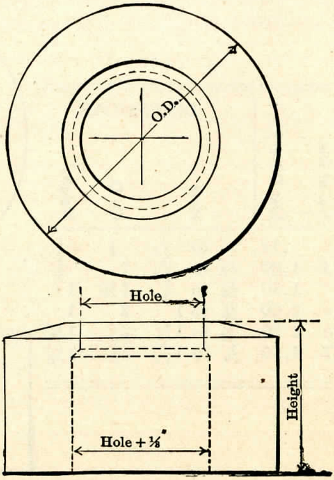
We recommend the more economical standard shown on pages 26 to 29.



No. of Punch	List Price Each	DIMENSIONS Diameter	Shank	Head	Length
0	.35	$\frac{5}{32}$ to $\frac{13}{32}$	$\frac{13}{32}$	$\frac{9}{16}$	$1\frac{1}{4}$
1	.37	$\frac{9}{32}$ to $\frac{9}{16}$	$\frac{9}{16}$	$\frac{3}{4}$	$1\frac{1}{2}$
2	.50	$\frac{9}{16}$ to $\frac{13}{16}$	$\frac{13}{16}$	1	$1\frac{1}{2}$
3	.75	$\frac{11}{16}$ to $1\frac{1}{16}$	$1\frac{1}{16}$	$1\frac{1}{4}$	$1\frac{7}{8}$
3 S	.58	$\frac{9}{32}$ to $\frac{9}{16}$	$\frac{13}{16}$	1	$1\frac{7}{8}$
4	1.25	$\frac{15}{16}$ to $1\frac{5}{16}$	$1\frac{5}{16}$	$1\frac{1}{2}$	$2\frac{1}{4}$
4 S	.80	$\frac{9}{16}$ to $1\frac{1}{16}$	$1\frac{1}{16}$	$1\frac{1}{4}$	$2\frac{1}{4}$
5	2.05	$1\frac{1}{16}$ to $1\frac{9}{16}$	$1\frac{9}{16}$	$1\frac{7}{8}$	$2\frac{5}{8}$
5 S	1.60	$\frac{11}{16}$ to $1\frac{5}{16}$	$1\frac{5}{16}$	$1\frac{1}{2}$	$2\frac{5}{8}$

$E = \frac{3}{16}''$

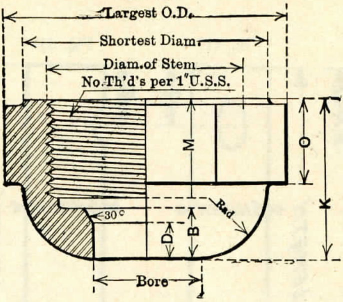
No. of Die	List Price Each	DIMENSIONS Hole	O. D.	Height
1	.75	$\frac{1}{8}$ to $\frac{9}{16}$	$1\frac{1}{4}$	$\frac{3}{4}$
2	1.25	$\frac{1}{4}$ to $\frac{13}{16}$	$1\frac{5}{8}$	$\frac{7}{8}$
3	1.60	$\frac{1}{4}$ to $1\frac{1}{16}$	2	1
5	4.35	$\frac{15}{16}$ to $1\frac{9}{16}$	$2\frac{7}{8}$	$1\frac{1}{8}$



Write for discounts

COUPLING NUTS

Fig. 149



For the convenience of our customers we hold Pratt & Whitney and Richards Couplings in stock for immediate delivery.

List prices and dimensions are given below.

CLEVELAND LIST

									SPECIAL		
	1	2	3s	3	4	5	6	7	19	20	21
List Price . .	.75	75	1.00	1 25	1.50	6.00	6.00	7.00	1.00	1.00	1.25
Largest O. D. .	$1\frac{7}{8}$	$1\frac{7}{8}$	$2\frac{5}{16}$	$2\frac{7}{8}$	$2\frac{7}{8}$	$4\frac{1}{16}$	$4\frac{1}{16}$	$4\frac{5}{8}$	$2\frac{5}{16}$	$2\frac{5}{16}$	$2\frac{5}{8}$
Threads per in.	10	10	10	10	10	10	10	10	10	10	10
Diam. of stem	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{3}{8}$	2	2	$2\frac{5}{8}$	$2\frac{5}{8}$	3	$1\frac{3}{8}$	$1\frac{7}{16}$	$1\frac{5}{8}$
Bore	.57	.757	1.07	1.07	1.32	1.57	2.07	2.578	1 07	1.07	1.07
K	$1\frac{5}{16}$	$1\frac{5}{16}$	$1\frac{5}{8}$	$1\frac{5}{8}$	$1\frac{5}{8}$	$2\frac{1}{8}$	$2\frac{1}{8}$	$2\frac{3}{8}$	$1\frac{5}{16}$	$1\frac{5}{8}$	$1\frac{5}{8}$

PRATT & WHITNEY LIST

	2	3	4	5	6	7	8
List Price . .	1.00	1.25	1.50	1.75	2.00	2.50	3.25
Largest O. D. .	$1\frac{9}{32}$	$1\frac{11}{16}$	$1\frac{15}{16}$	$2\frac{1}{4}$	$2\frac{5}{8}$	$2\frac{15}{16}$	$3\frac{1}{2}$
Threads per in.	12	12	12	12	12	12	12
Diam. of stem	$\frac{11}{16}$	$\frac{7}{8}$	$1\frac{1}{16}$	$1\frac{5}{16}$	$1\frac{9}{16}$	$1\frac{7}{8}$	$2\frac{1}{4}$
Bore	$\frac{7}{16}$	$\frac{5}{8}$	$\frac{13}{16}$	$1\frac{1}{16}$	$1\frac{1}{4}$	$1\frac{9}{16}$	$1\frac{13}{16}$

RICHARDS LIST

	0	1	2	3	3s	4	4s	5	5s
List Price . .	1.13	1.25	1.50	2.00	2.00	2.50	2.50	3.40	3.40
Largest O. D. .	$1\frac{9}{32}$	$1\frac{23}{32}$	$1\frac{7}{8}$	$2\frac{5}{16}$	$2\frac{5}{16}$	$2\frac{5}{8}$	$2\frac{5}{8}$	$2\frac{7}{8}$	$2\frac{7}{8}$
Threads per in.	14	12	10	10	10	10	10	10	10
Diam. of stem	$\frac{11}{16}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{13}{32}$	$1\frac{13}{32}$	$1\frac{11}{16}$	$1\frac{11}{16}$	2	2
Bore	$\frac{7}{16}$	$\frac{19}{32}$	$\frac{27}{32}$	$1\frac{3}{32}$	$\frac{27}{32}$	$1\frac{11}{32}$	$1\frac{3}{32}$	$1\frac{19}{32}$	$1\frac{11}{32}$

Order punches and dies by figure number or
use pages 61 and 62.

Write for discounts

STRAIGHT SHANK PUNCHES

Fig. 111

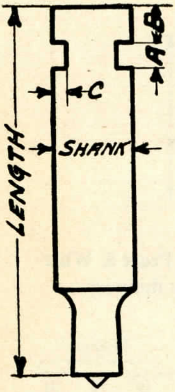


Fig. 112

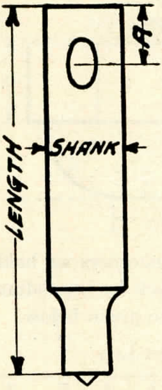


Fig. 113

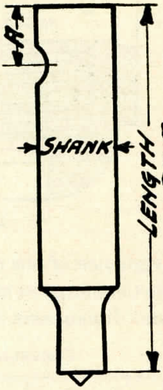


Fig. 114

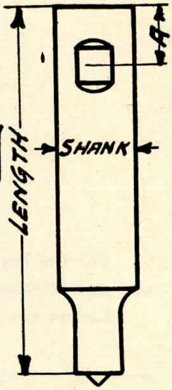


Fig. 115

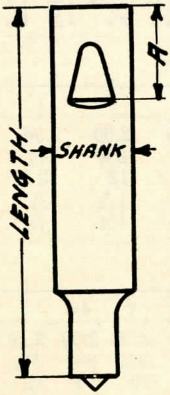


Fig. 116

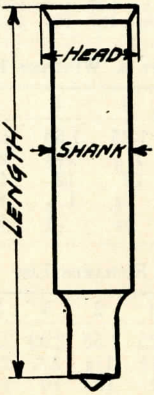
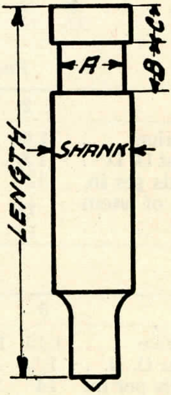


Fig. 117



These punches can be ordered by giving the figure number and dimensions shown, or by using Specification Sheets, pages 61 and 62.

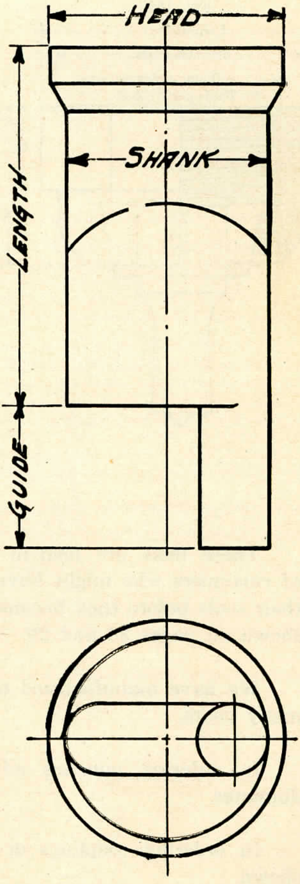
RIPPING PUNCH

These tools are used in cutting odd shapes in plate, notching, etc.

The guide should be about ⅛″ to ¼″ longer than the stroke of the machine.

Advise dimensions required when ordering.

Fig. 110



Order punches and dies by figure number or use pages 61 and 62.

ROLLED HEAD PUNCHES

Fig. 155

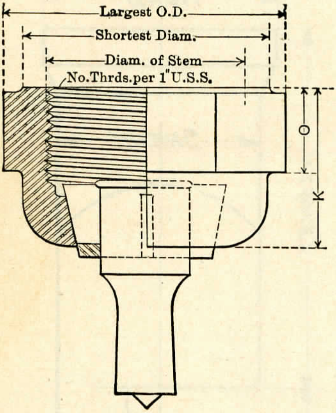


Fig. 156

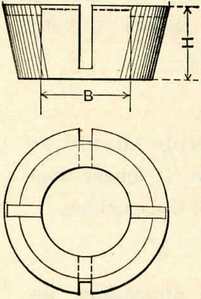
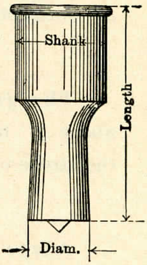


Fig. 157



These tools are held in stock simply for the convenience of customers who might have adopted this method of holding their tools before they became acquainted with the standard shown on pages 26 and 29.

We have manufactured tools of this description for a great many years.

In ordering punches advise length over all, shank and diameter.

In ordering couplings or sleeves give required dimensions shown,

Order punches and dies by figure number or

use pages 61 and 62.

DIES

Fig. 128

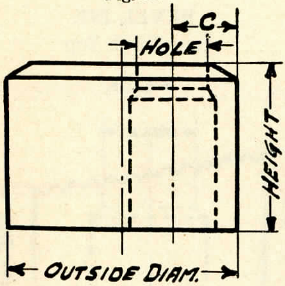
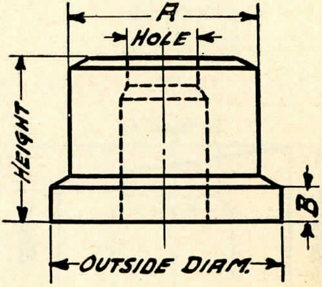


Fig. 130



Special dies are made to order

In ordering refer to the Fig. number of the tool you want and advise dimensions desired.

Specification sheets are pages 61 and 62.

Fig. 131

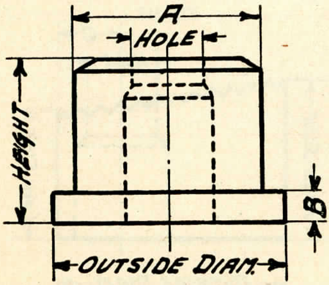
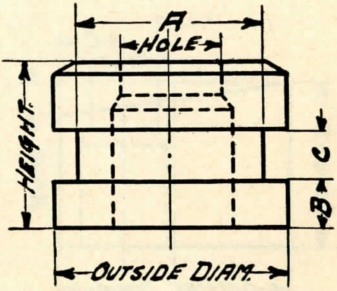


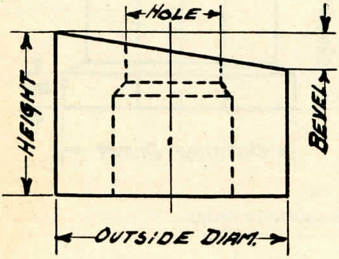
Fig. 132



BEVEL DIES

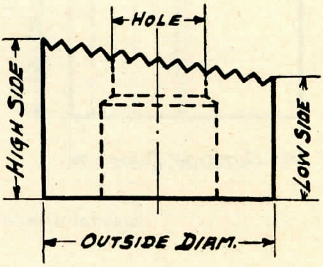
BEVEL DIE
Smooth Top

Fig. 127



BEVEL DIE
Saw Tooth Top

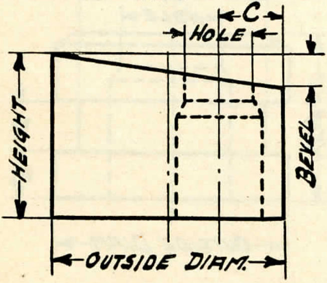
Fig. 218



If your material slips in punching we recommend Saw Tooth top dies shown on this page.

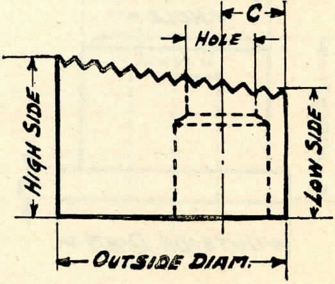
BEVEL ECCENTRIC DIE
Smooth Top

Fig. 129



BEVEL ECCENTRIC DIE
Saw Tooth Top

Fig. 241



EXTRA QUALITY TOOL STEEL

When we offer tools made of Extra Quality Tool Steel, our customers can rest assured that they are receiving High Grade Crucible Steel Tools.

If you have been in the habit of buying these tools from jobbers without specifying Cleveland Extra Quality, you have undoubtedly received the common grade, which will not give satisfaction where any record is kept of the service.

Common grade tools are made of the cheapest steel that can be used.

Extra Quality means Hand Forged tools of High Grade Crucible Steel, which give the highest efficiency per unit of cost.

CLEVELAND SOLID FRAME PUNCHES

GENERAL INFORMATION

This company has had twenty-five years of successful experience in the manufacture of tools used in the fabrication of iron and steel.

For the past five years we have confined our product to Cleveland solid semi-steel frame machines which have been received by the fabricators with flattering results.

Open gap machines are made with capacities and depth of gaps as follows:

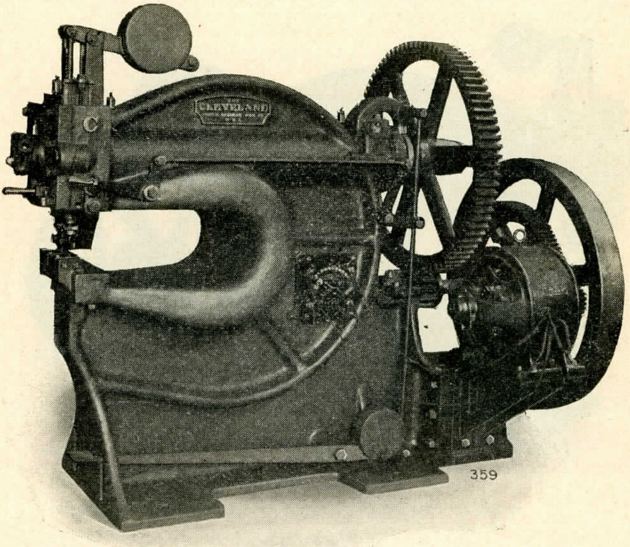
CAPACITY	DEPTH OF GAPS IN INCHES					
½ in. hole in ½ in. plate	6	12	18			
1 in. hole in ½ in. plate	12	24	36	48		
1 in. hole in 1 in. plate	12	24	36	48	60	72
1¼ in. hole in 1 in. plate	12	24	36	48	60	72
1½ in. hole in 1½ in. plate	12	24	36	48	60	72
2 in. hole in 1 in. plate	12	24	36	48	60	72
2½ in. hole in 1½ in. plate	18	36	48	60	72	
2 in. hole in 2 in. plate	18	36	48	60	72	
3 in. hole in 2 in. plate	18	30	48	60	72	

Method of drive, belt, motor or steam.

Attachments: Regular and flue hole punching, bar angle and plate shearing, also special attachments. All attachments interchangeable.

In specifying Cleveland solid semi-steel frame machines, please indicate the capacity, depth of gap, attachments, and method of drive required.

HIGH SPEED PUNCH



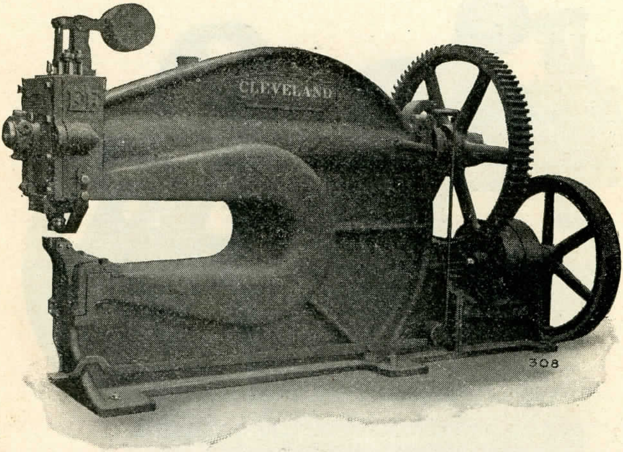
The above cut represents our light close coupled motor driven high speed machine, which is used extensively in light structural shops for punching or shearing of structural shapes.

It can be operated at high speed and may be equipped with double gag punches so that two sizes of holes may be punched without change.

In specifying Cleveland solid frame machines, be kind enough to indicate the depth of gap, capacity, and method of drive required.

For capacities and depth of gaps see page 42.

SOLID FRAME PUNCHES



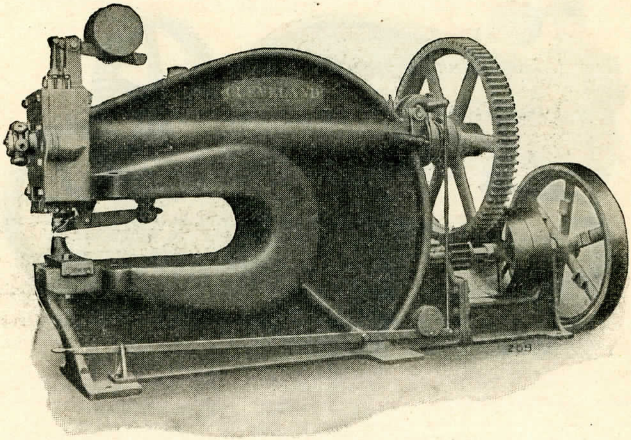
The above cut represents our standard Cleveland solid semi-steel frame architectural jaw combination punching and shearing machine, used extensively in shops making a specialty of the fabrication of structural shapes.

It is arranged with architectural or over-hanging jaw, so that shapes can be punched in the webs or flanges.

In specifying Cleveland solid frame tools, be kind enough to suggest the depth of throat, capacity and method of drive.

For depth of gaps see page 42.

SOLID FRAME PUNCHES



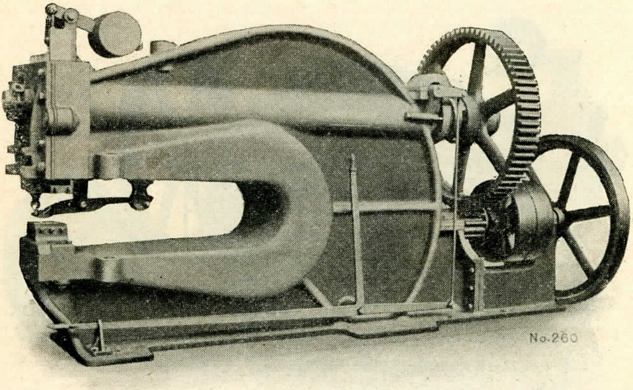
The above cut represents our standard Cleveland solid semi-steel frame plain jaw boiler makers' tool, which is used extensively in standard boiler shops for the punching and shearing of plate, flue holes and hand holes.

It has capacity to punch 1¼ in. hole through 1 in. plate and can be arranged with belt, motor or steam drive.

In specifying Cleveland solid semi-steel frame machines, be kind enough to indicate the depth of throat, the capacity, and the method of drive required.

For depth of gaps, see page 42.

SOLID FRAME PUNCHES



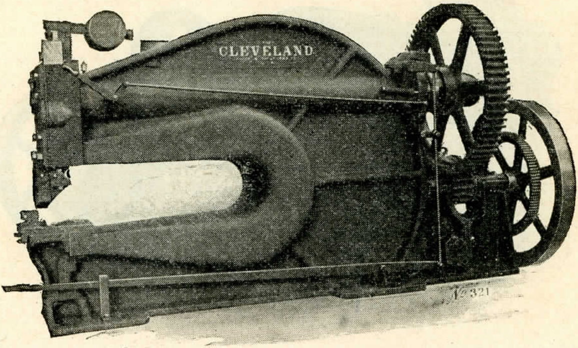
The above cut represents our boiler maker type combination punch and shear. This type of machine has capacity to punch 2 inch hole through 1 inch plate, and is standard for heavy boiler construction and railroad work.

It can be arranged with tight and loose pulley belt drive, as shown, with motor or steam drive.

In specifying for Cleveland solid semi-steel frame machines, be kind enough to designate the depth of throat required, the capacity, and method of drive and the number of attachments.

For depth of gaps see page 42.

RAILROAD FLUSH FRONT SHEAR



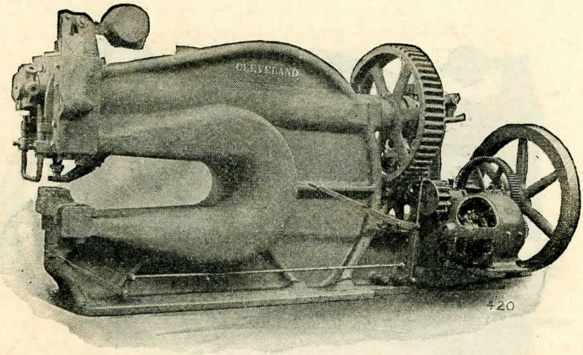
The above cut represents our special flush front shear, which is used extensively by railroads for the shearing of boiler head flanges and other work which must be in full view of the operator.

This machine is built having flush front shearing attachment which is interchangeable with architectural jaw punching attachment.

In specifying Cleveland solid frame tools, be kind enough to indicate the depth of throat, the capacity and the method of drive required.

For capacities and depth of gaps see page 42.

HEAVY SOLID FRAME PUNCH AND SHEAR



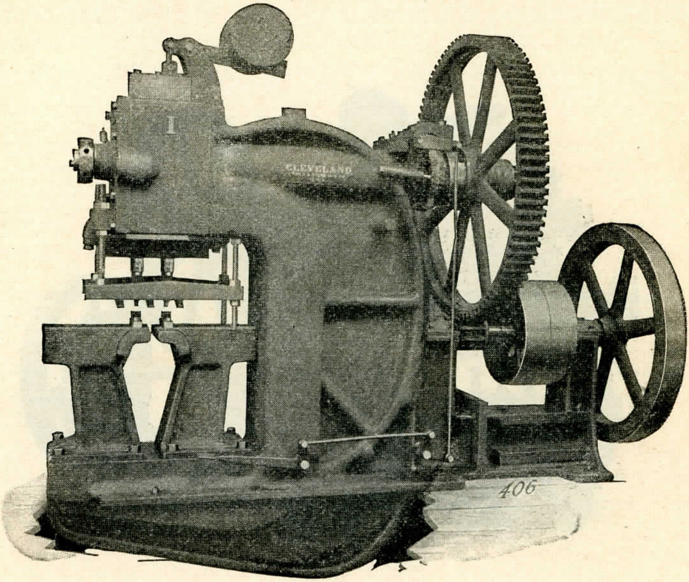
The above cut illustrates our Cleveland solid semi-steel frame special heavy back geared mill type combination punch and shear.

This machine has capacity to shear 1½ inch plate and to punch 2½ inch hole through 1½ inch plate. It is used extensively for shearing heavy plate on curved lines.

In specifying Cleveland solid frame open gap combination punches and shears please specify the depth of gap, the type of drive and the number of attachments.

For depth of gaps see page 42.

SPECIAL BEAM JAW MACHINE FOR BETHLEHEM SECTIONS

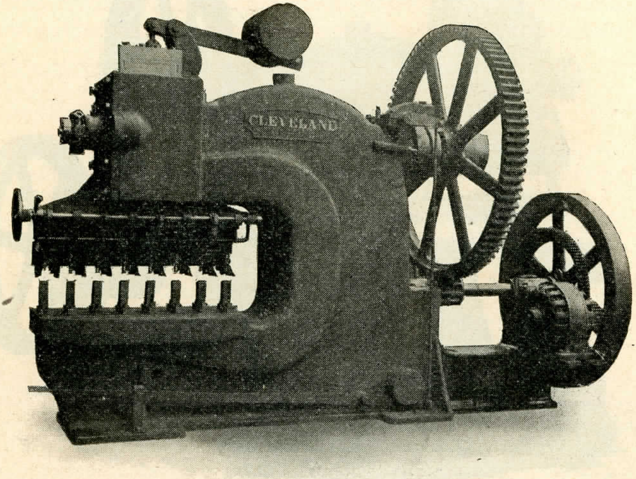


The above cut represents a Cleveland solid frame special Bethlehem beam jaw combination multiple punching and coping machine,

It can be arranged for double punching flanges, multiple punching webs and coping or notching all standard or Bethlehem sections.

In specifying Cleveland beam jaw machine, please indicate the maximum size of beams to be fabricated and the method of drive.

SPECIAL PUNCH

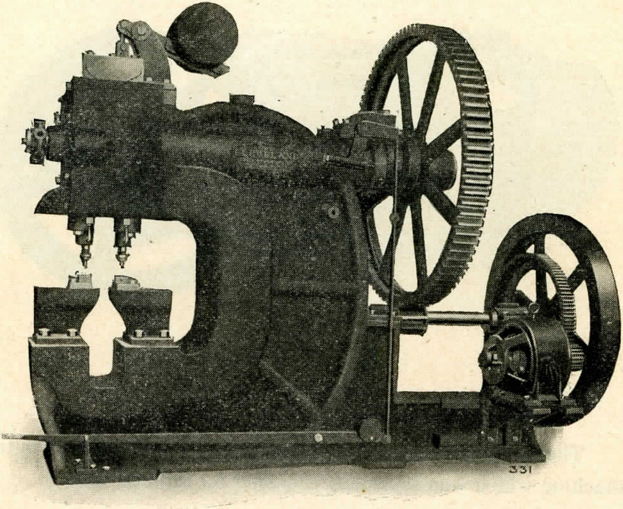


The above cut represents a special type of machine equipped with high die blocks and arranged so that spacing table can be attached for the multiple punching of plates or angles.

This machine can be arranged with motor or belt drive.

In specifying please designate the depth of throat required and the number of holes and thickness of material you desire to fabricate.

REGULAR BEAM JAW MACHINE FOR STANDARD SECTIONS



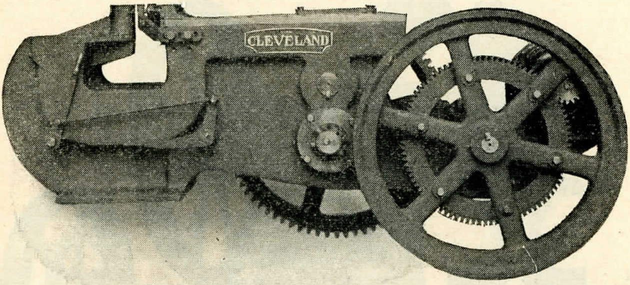
The above cut represents a Cleveland solid semi-steel frame beam jaw machine equipped with double punching attachment for the punching of flanges of I beams.

These machines are built with 24-inch and 36-inch depth of throats, and can be arranged with all the fabricating tools required in the complete fabrication of standard or Bethlehem sections.

In specifying Cleveland solid frame beam jaw machines, be kind enough to give the depth of throat required, the maximum sizes of material to be fabricated and the method of drive.

Complete catalog of machines sent on request

HORIZONTAL PUNCH



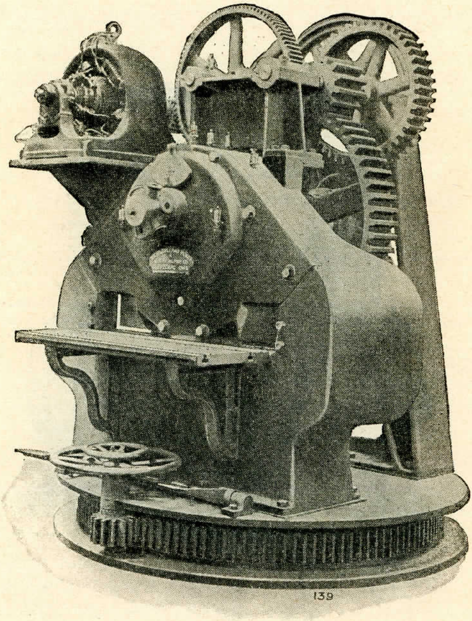
The above cut represents a special jaw Cleveland horizontal machine which was especially designed for railroad work.

These machines are built with any capacity specified and can be arranged with motor, belt or steam drive.

STANDARD CAPACITIES	DEPTH OF GAPS IN INCHES			
1 in. hole in ½ in. plate	6			
1 in. hole in 1 in. plate	10	30		
1¼ in. hole in 1 in. plate	12	20	30	
2 in. hole in 1 in. plate	12	15	18	30

Complete catalog of machines sent on request

ANGLE SHEARS



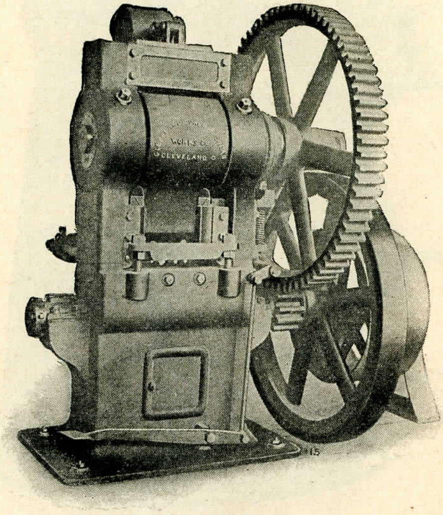
The above cut represents Cleveland double angle shear, which is arranged to shear angles either square or at a bevel of 45 degrees, in either leg, with the least possible distortion.

This machine is built in seven different sizes, and can be arranged with belt, motor or steam drive.

When arranged for motor or steam drive it may be mounted on turntable as shown in illustration.

In specifying please indicate the maximum size of angles to be sheared and the method of drive.

BAR SHEARS



The above cut represents a Cleveland double housing or Guillotine bar shear. This machine is built in seven different sizes, and can be arranged with belt, motor or steam drive.

In specifying Cleveland bar shears, please indicate maximum size of material to be sheared and also method of drive.

BENDING ROLLS

Cleveland plate bending rolls are arranged with rolls having length and diameter to meet the requirements as specified by our customer.

The top roll is arranged to raise and lower by power except in the smaller sizes, where the hand screw method of raising and lowering is sufficient.

These rolls can be arranged with motor, belt or steam drive.

In specifying please suggest the width and thickness of the plate you desire to bend and also the method of drive.

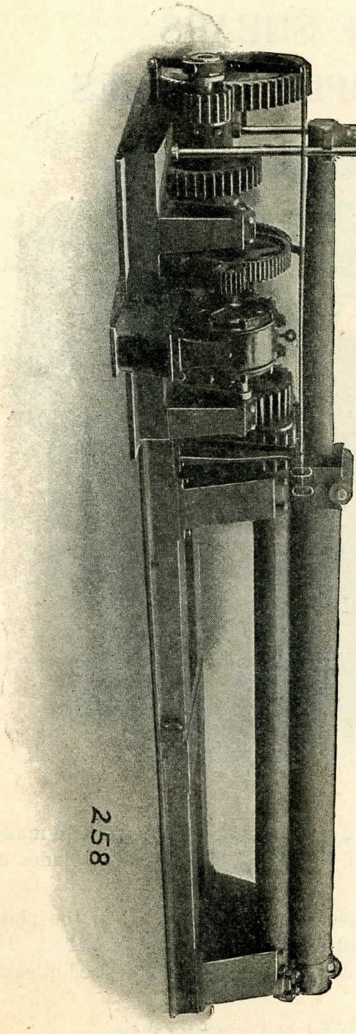


PLATE SHEARS OR MULTIPLE PUNCHES

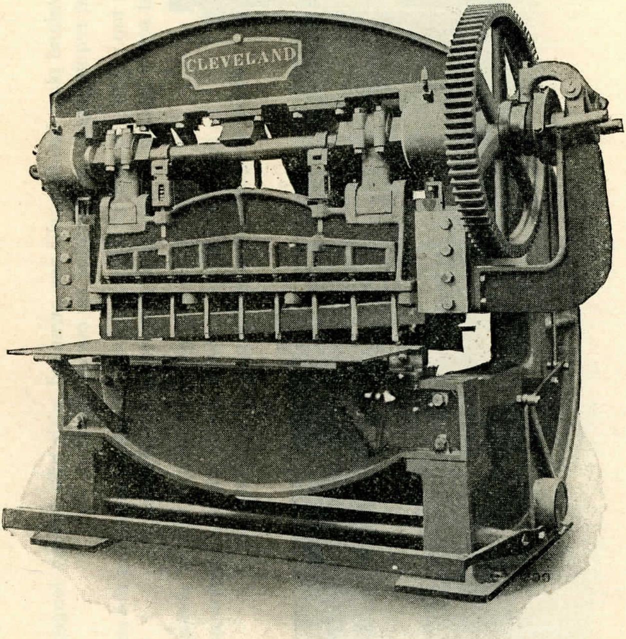
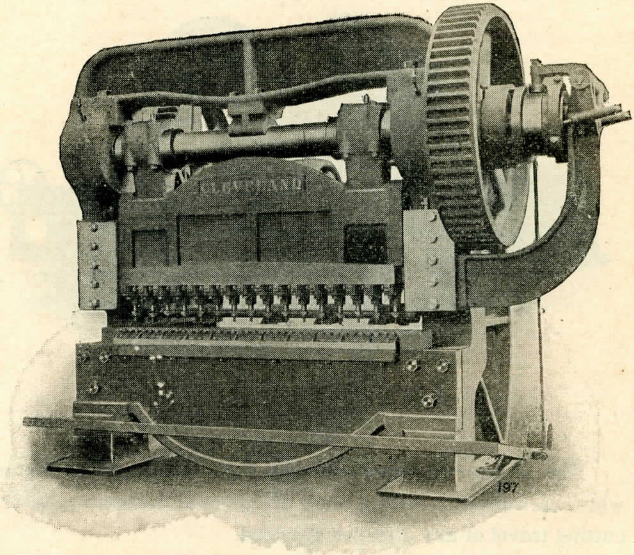


Plate shears for shearing or splitting plate are made in many different capacities and can be arranged with shear blades or punching attachments.

When sending inquiry, please suggest the size of the plate to be cut or the number and size of holes to be punched, the distance between housings, and the depth of gap desired in each housing.

These machines are built for belt or motor drive.

MULTIPLE PUNCH OR GATE SHEAR



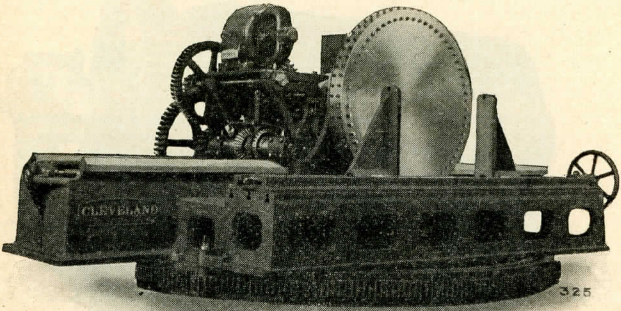
The above cut represents a multiple punch or a gate shear, which can be arranged with shear blades or punching attachments, and be used for the splitting and shearing of plate, or the multiple punching of plate, angles, or structural shapes.

When sending inquiry, please suggest the size of the plate to be split or the number and size of holes to be punched, the distance between housings and the depth of gap desired in each housing.

These machines are built for either belt or motor drive.

Complete catalog of machines sent on request

ROTARY PLANERS



The above cut represents our high speed rotary planer, which are built with cutting heads of various diameters and having cutting travel of any distance specified.

The machine can be arranged with motor attached to traveling carriage, as shown in this illustration, or with motor mounted on the end of the bed.

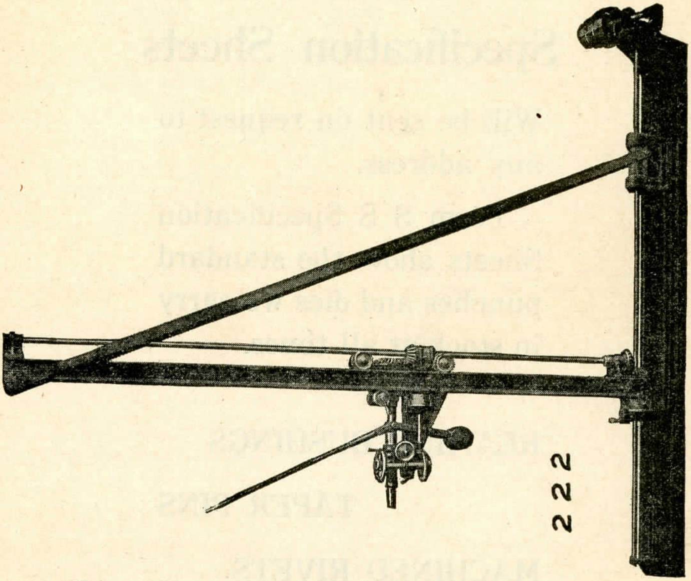
The Rotary Planer may be mounted on turntable as shown in illustration if so specified.

When sending inquiry, please specify the diameter of cutting head and travel of head, and method of drive.

Complete catalog of machines sent on request

CLEVELAND WALL RADIAL DRILL

In stock with motor or belt drive



This machine is mounted on a wall plate, which permits of a vertical adjustment of the horizontal arm of 6 feet.

The wall plate can be inverted so that the motor or driving pulley will be at bottom instead of top.

These machines are made in any length of arm from 6 feet to 25 feet, and are used for reaming, counter sinking and drilling, having capacity to drill 1½ inch hole in cast iron.

The spindle carriage travels on the horizontal arm and is equipped with pinch cams to hold carriage at any desired point.

The spindle can be arranged for vertical travel of 8 to 12 inches and is equipped with hand lever, hand wheel or automatic feeds, or a combination of these feeds.

The driving pulley is arranged to swivel so that drill can be easily adjusted to any position.

Specify length of arm and feed required in writing for price.

Complete Catalogue of Machines sent on request

Specification Sheets

Will be sent on request to any address.

Form S S Specification Sheets show the standard punches and dies we carry in stock at all times.

REAMING BUSHINGS

TAPER PINS

MACHINED RIVETS

SPECIAL SCREWS

BOLTS

CAP SCREWS, etc.

Specification Sheet

Fill dimensions in below, tear out and mail to us.

Tools in stock shown on pages 26 to 35.

Fig. 126

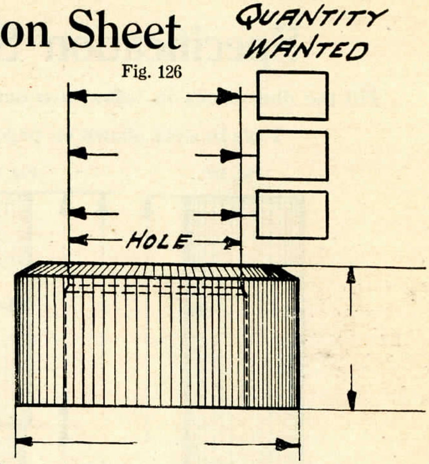


Fig. 187

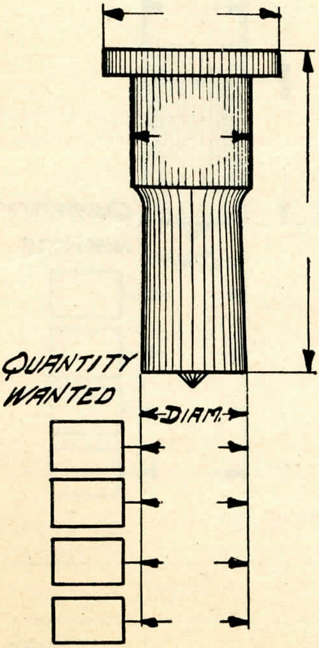
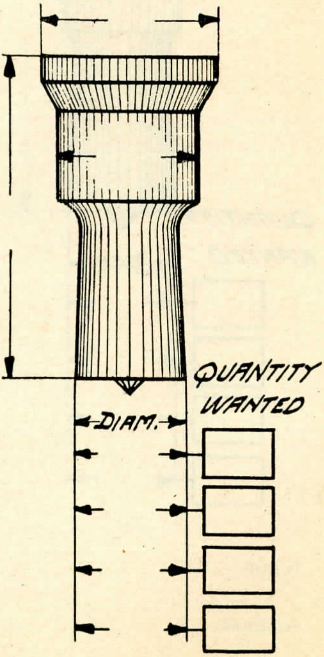


Fig. 186



(OVER)

Specification Sheet

Fill the dimensions in below, tear out and mail to us.

Tools in stock shown on pages 26-35.

Fig. 185

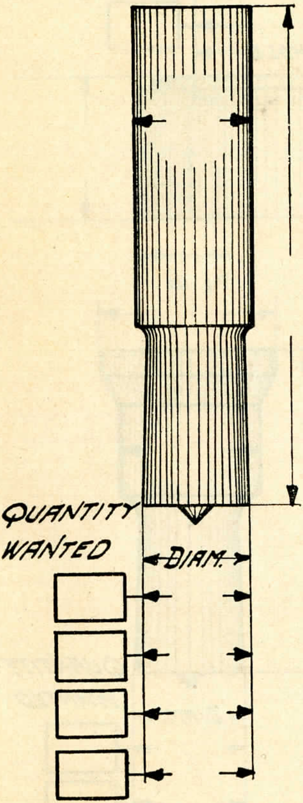
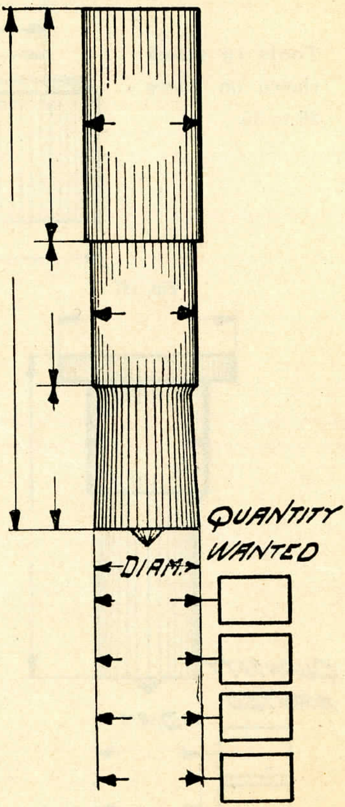


Fig. 184



Name ....

Address ....

(OVER)

Specification Sheet

Fill dimensions in below, tear out and mail to us.

Tools in stock shown on pages 26 to 35.

Fig. 126

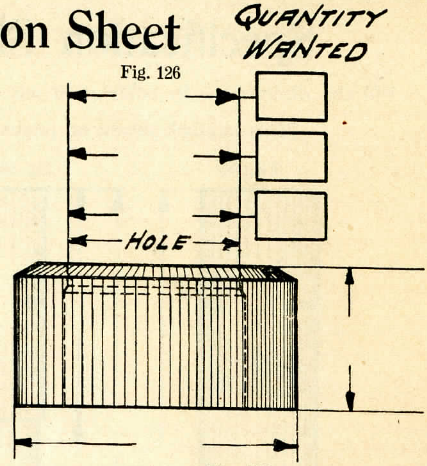


Fig. 187

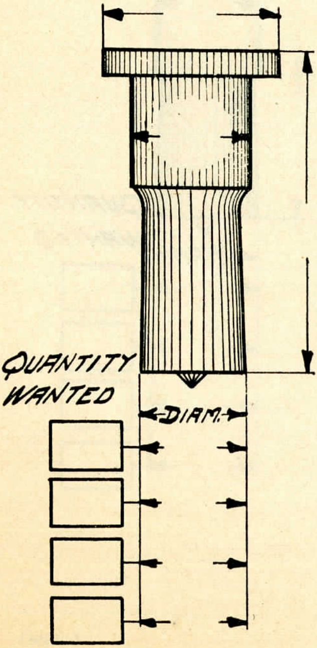
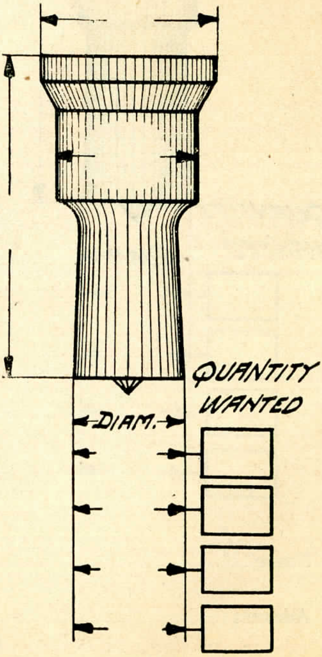


Fig. 186



(OVER)

Specification Sheet

Fill the dimensions in below, tear out and mail to us.

Tools in stock shown on pages 26-35.

Fig. 185

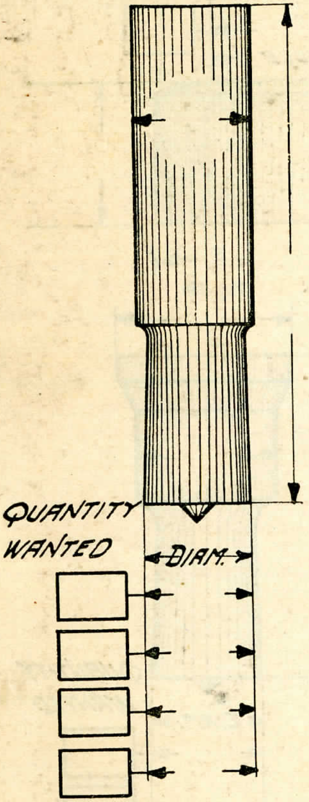
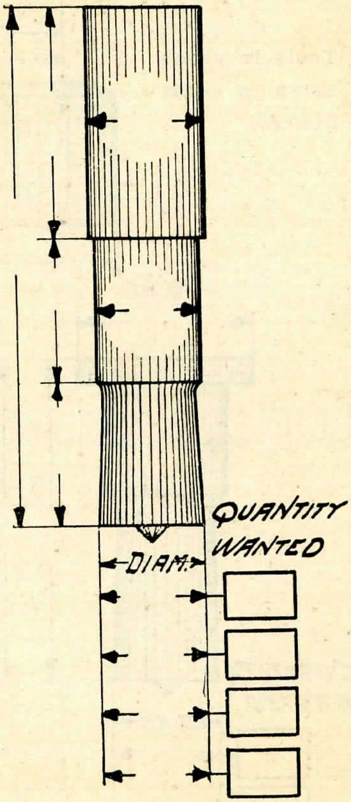


Fig. 184



Name ....

Address ....

(OVER)

CAPACITY of MACHINES.

Diameter of Hole | Thickness of Plate	3 x 3	2½ x 2½	2 x 2	1¾ x 1¾	1½ x 1½	1¼ x 1¼	1 x 1	¾ x ¾	½ x ½
Dia. of Punch	THICKNESSES of PLATE.								
3in.	3	2.08	1.33	1.02	.75	.521	.33	.187	.083
2½	3.6	2.5	1.60	1.22	.9	.625	.4	.221	.1
2		3.13	2	1.53	1.13	.781	.5	.281	.125
1¾			2.28	1.75	1.29	.892	.571	.321	.143
1½				2.04	1.5	1.04	.666	.375	.166
1¼					1.8	1.25	.8	.45	.2
1						1.56	1	.56	.25
¾							1.33	.75	.3
½								1.13	.5

EXAMPLE

GIVEN:—A machine with capacity to punch 1½ in. hole through 1½ in. plate.

Same machine will punch a 3 in. hole through ¾ in. plate, or a 2 in. hole through 1.13 in. plate.

The Cleveland
Punch & Shear Works Co.

CLEVELAND, OHIO, U. S. A.

Punches and Shears
Bending Rolls
Straightening Rolls
Rotary Planers
Straightening Machines
Multiple Punches
Gate Shears
Radial Drills
Bar Shears
Plate Planers
Angle Shears

Small Tools for
Plate and Structural
Iron Workers